

REMARKS

Please consider the following comments. Following this response, claims 1-6, 10-13, 21-24, and 26-34 are pending. Claims 7-9, 14-20, and 25 have been canceled; claims 1, 5, 6, and 24 have been amended, and claim 34 has been added. Applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Priority

Applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all of the certified copies of the priority documents have been received.

Information Disclosure Statement

Applicants acknowledge and appreciate receiving an initialed copy of each of the forms PTO-1449 that were filed on 19 September 2006, 3 July 2007, and 31 July 2007.

Claim Objection

The Examiner has objected to claim 1 based on a number of informalities. In particular, the Examiner has asserted that the term “the direction” in claim 1, line 15, should be replaced with the term “a direction”; that the term “the integrated radio wave” in claim 1, line 15, should be replaced with the term “an integrated radio”; and that the term “the direction normal” in claim 1, line 17, should be replaced with the term “the direction”.

By this response, the Applicants have amended claim 1, line 15, according to the Examiner’s suggestion, thus eliminating these informalities.

However, Applicants have amended claim 1, line 17 to replace the term “the direction normal” with the term “a direction normal”. The recited “direction normal to said substrate” is not the same as the recited “direction of an integrated radio wave beam.” In fact, as recited in claim 1, the direction of an integrated radio wave beam is inclined from the direction normal to said substrate. This can be seen, for example, in Applicants’ FIG. 2 and related portions of the specification.

These amendments are being made solely to correct formal objections, and not in response to any art rejection. Any narrowing amendment to the claims in the present amendment is not to be construed as a surrender of any subject matter between the original claims and the present claims; rather this is merely an attempt at providing one or more definitions of what the Applicants believe to be suitable patent protection. The present claims provide the intended scope of protection that the Applicants are seeking for this application. Therefore, no estoppel should be presumed, and the Applicants’ claims are intended to include a scope of protection under the Doctrine of Equivalents.

Based on this amendment, Applicants respectfully request that the Examiner withdraw the objection to claim 1.

Rejections – 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 1, 5-9, 14, 24 and 25 under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

By this response, Applicants have canceled claims 7-9, 14, and 25, thus rendering moot this ground of rejection as it pertains to these claims.

With respect to claim 1 and 24, the Examiner has asserted that “high frequency signal” renders the claims indefinite because the word “high” is a relative term. By this response, Applicants have amended claims 1 and 24 to replace the term “high frequency signal” with the term “radio wave signal”. Support for this amendment can be found, for example, on page 22, lines 6-25, of Applicants’ specification, and in Applicants’ FIG. 1.

With respect to claim 5, the Examiner has asserted that the recitation “said at least one spot of said at least one antenna electrode which is connected to said ground electrode is in the vicinity of a terminal edge of said at least one antenna electrode, and is located at a position approximately in the middle thereof in a direction which is orthogonal to the direction from said feed point to its terminal edge,” is unclear. In particular, the Examiner has asserted that: (1) it is unclear what “in the middle thereof” means; (2) the term “the direction” in line 4 has no antecedent basis; and (3) it is unclear what “its” refers to and whether or not “its terminal edge” in line 4 is different to or the same as “a terminal edge of said at least one antenna electrode.”

By this response, Applicants have amended claim 5 to recite that “said at least one spot of said at least one antenna electrode which is connected to said ground electrode is in the vicinity of a terminal edge of said at least one antenna electrode, the terminal edge being on a side opposite to said feed point.” This should avoid all of the language that the Examiner found unclear.

This amendment is being made solely to correct formal matter, and not in response to an art rejection. Any narrowing amendment to the claims in the present amendment is not to be construed as a surrender of any subject matter between the original claims and the present claims; rather this is merely an attempt at providing one or more definitions of what the Applicants believe to be suitable patent protection. The present claims provide the intended

scope of protection that the Applicants are seeking for this application. Therefore, no estoppel should be presumed, and the Applicants' claims are intended to include a scope of protection under the Doctrine of Equivalents.

Based on at least the reasons given above, Applicants submit that claims 1, 5, 6, and 24 are definite and meet all of the requirements of 35 U.S.C. § 112, second paragraph. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1, 5-9, 14, 24 and 25 under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

Rejections - 35 U.S.C. § 102

The Examiner has rejected claims 1, 5, and 14 under 35 USC § 102(e) as being allegedly unpatentable over United States Patent Publication No. 2003/0164797 to Ngai et al. ("Ngai"). Applicants respectfully request that this rejection be withdrawn for the following reasons.

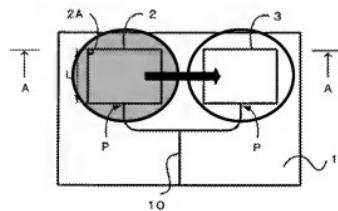
By this response Applicants have canceled claim 14, thus rendering moot this ground of rejection as it pertains to this claim.

In addition, Applicants have amended claim 1 to recite "a connection member that connects at least one antenna electrode among said plurality of antenna electrodes to said ground electrode, at least at one spot thereof which is different from said feed point, the connection member connecting fewer than all of the plurality of antenna electrodes to said ground electrode at once." Similarly, Applicants have amended claim 24 to recite "a connection member that is connected to all of the plurality of antenna electrodes and connects at least one antenna electrode among said plurality of antenna electrodes to said ground electrode, at least at one spot thereof

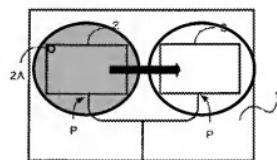
which is different from said feed point thereof ... wherein said connection member includes a switch that opens and closes connections between said at least one antenna electrode and said ground electrode via said connection member, and said switch closes fewer connections than the connections of all of the plurality of antenna electrodes to said ground electrode at once."

Support for these amendments can be found, for example, in from page 22, line 2, through page 34, line 16, of Applicants' specification, and in Applicants' FIG. 1-19.

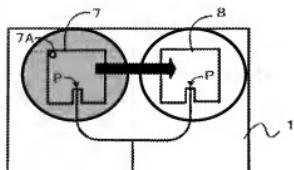
Thus, one of the features of amended claims 1 and 24 is that fewer than all of the plurality of antenna electrodes are connected to the ground electrode at once. By having at least one antenna electrode connected to the ground electrode and at least one antenna electrode *not* connected to the ground electrode, an integrated radio wave beam can be effectively inclined from a direction normal to the surface of the substrate. This can be seen, by way of example, in Applicants' FIGs. 2, 5, and 8-12, and related portions of the specification.



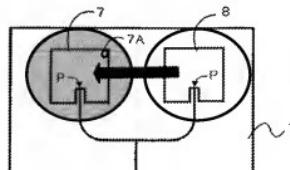
Applicants' FIG. 2



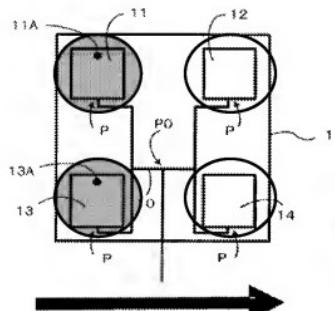
Applicants' FIG. 5



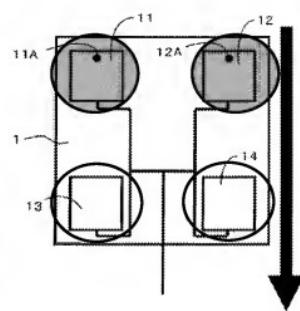
Applicants' FIG. 8



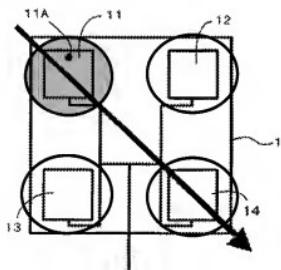
Applicants' FIG. 9



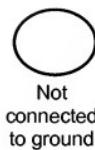
Applicants' FIG. 10



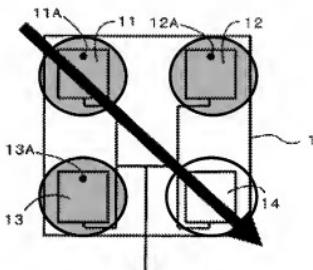
Applicants' FIG. 11



Applicants' FIG. 12



Not connected to ground



Applicants' FIG. 13

As such, according to claims 1 and 24, a direction of a radio wave beam can be quite easily and efficiently changed by simply connecting at least one of the antenna electrode to the ground electrode while at least one another antenna electrode is not connected to the ground electrode.

In contrast, Ngai discloses that all of the antenna elements 14/ patch elements 54 (what the Examiner relies upon for a teaching of the recited antenna electrodes) are simultaneously connected to the ground planes 20, 60/lower patch elements 56 (what the Examiner relies upon

for a teaching of the recited ground electrode). As noted above, if all of the antenna elements/patch elements are connected to the ground plane/lower patch element, the radio wave beam will not be inclined. This can be seen in FIGs. 1 and 3 of Ngai.

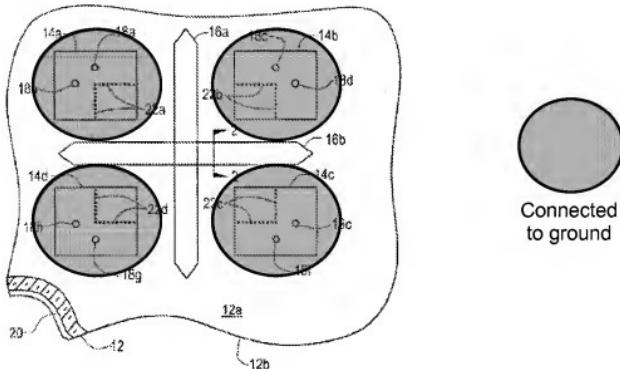


FIG. 1

FIG. 1 of Ngai

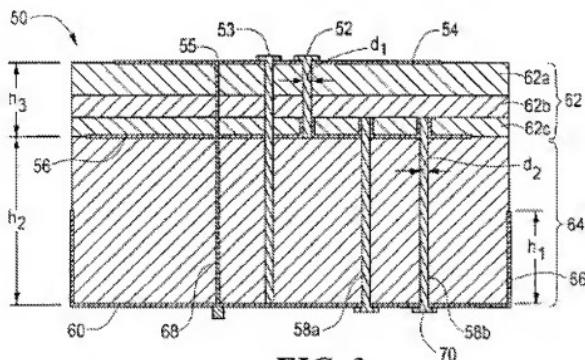


FIG. 3

FIG. 3 of Ngai

Thus, Ngai does not disclose “the connection member connecting fewer than all of the plurality of antenna electrodes to said ground electrode at once,” as recited in amended claim 1, or that “said connection member includes a switch that opens and closes connections between said at least one antenna electrode and said ground electrode via said connection member, and said switch closes fewer connections than the connections of all of the plurality of antenna electrodes to said ground electrode at once,” as recited in amended claim 24.

Claim 5 depends from claim 1 and is allowable for at least the reasons given above for claim 1.

Therefore, based on at least the reasons given above, Applicants respectfully request that the Examiner withdraw the rejection of claims 1, 5, and 14 under 35 USC § 102(e) as being unpatentable over Ngai.

The Examiner has rejected claims 1, 6, 7, 14, 19, 20, 24 and 25 under 35 U.S.C. § 102(b) as being allegedly anticipated by United States Patent No. 6,195,047 to Richards (“Richards”). Applicants respectfully request that this rejection be withdrawn for the following reasons.

By this response Applicants have canceled claims 7, 14, 19, 20, and 25, thus rendering moot this ground of rejection as it pertains to these claims.

As noted above, claims 1 and 24 have been amended to better recite the connection member. In particular, Applicants have amended claim 1 to recite “the connection member connecting fewer than all of the plurality of antenna electrodes to said ground electrode at once,” and have amended claim 24 to recite that “said connection member includes a switch that opens and closes connections between said at least one antenna electrode and said ground electrode via

said connection member, and said switch closes fewer connections than the connections of all of the plurality of antenna electrodes to said ground electrode at once."

In contrast, Richards discloses that all of the short microstrip patches 20 (what the Examiner relies upon for a teaching of the recited antenna electrodes) are simultaneously connected to the ground plane 26 (what the Examiner relies upon for a teaching of the recited ground electrode). As noted above, if all of the short microstrip patches 20 are connected to the ground plane, the radio wave beam will not be inclined. This can be seen in FIGs. 2A and 2B of Richards.

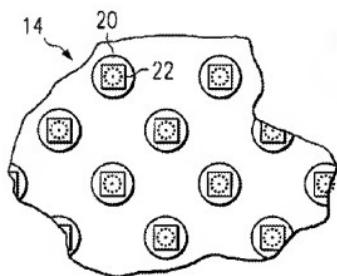


FIG. 2A of Richards

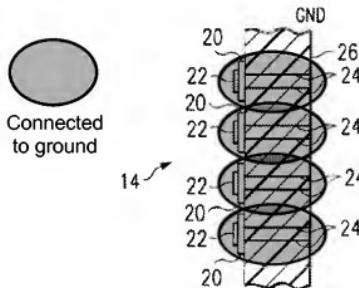


FIG. 2B of Richards

Thus, Richards does not disclose "the connection member connecting fewer than all of the plurality of antenna electrodes to said ground electrode at once," as recited in amended claim 1, or that "said connection member includes a switch that opens and closes connections between said at least one antenna electrode and said ground electrode via said connection member, and said switch closes fewer connections than the connections of all of the plurality of antenna electrodes to said ground electrode at once," as recited in amended claim 24.

Claim 6 depends from claim 1 and is allowable for at least the reasons given above for claim 1.

Therefore, for at least the reasons given above, Applicants respectfully request that the Examiner withdraw the rejection of claims 1, 6, 7, 14, 19, 20, 24 and 25 under 35 U.S.C. § 102(b) as being allegedly anticipated by Richards.

Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 8 and 9 under 35 USC § 103(a) as being allegedly unpatentable over Richards in view of United States Patent Publication No. 2008/0308920 to Wan (“Wan”). Applicants respectfully request that this rejection be withdrawn for the following reasons.

By this response Applicants have canceled claims 8 and 9, thus rendering moot this ground of rejection as it pertains to these claims.

Therefore, the Applicants respectfully request that the Examiner withdraw the rejection of claims 8 and 9 under 35 USC § 103(a) as being unpatentable over Richards in view of Wan.

New Claims

By this response, Applicant has added new claim 34. Support for this new claim can be found, for example, from page 22, line 2, through page 34, line 16, of Applicants' specification, in original claims 1 and 24, and in Applicants' FIGs. 1-19. No new matter has been added in this new claim. Applicants respectfully request that the Examiner enter and consider this new claim.

Conclusion

Applicants respectfully submit that, as described above, the cited prior art does not show or suggest the combination of features recited in the claims. Applicants do not concede that the cited prior art shows any of the elements recited in the claims. However, Applicants have provided specific examples of elements in the claims that are clearly not present in the cited prior art.

Applicants strongly emphasize that one reviewing the prosecution history should not interpret any of the examples Applicants have described herein in connection with distinguishing over the prior art as limiting to those specific features in isolation. Rather, for the sake of simplicity, Applicants have provided examples of why the claims described above are distinguishable over the cited prior art.

In view of the foregoing, Applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the Examiner is invited to contact the undersigned by telephone.

Although it is not anticipated that any additional fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. 50-1147.

Respectfully Submitted,

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